



Natural Heritage &
Endangered Species
Program

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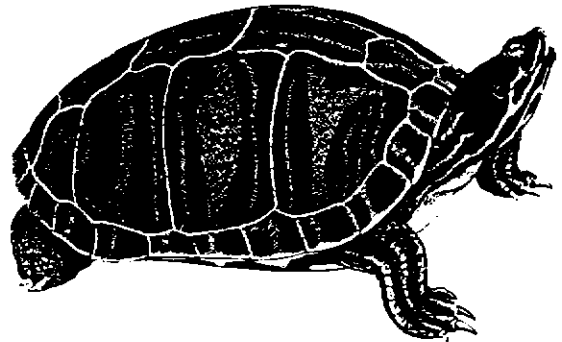
MASSACHUSETTS ENDANGERED SPECIES

Plymouth Redbelly Turtle
Pseudemys rubriventris

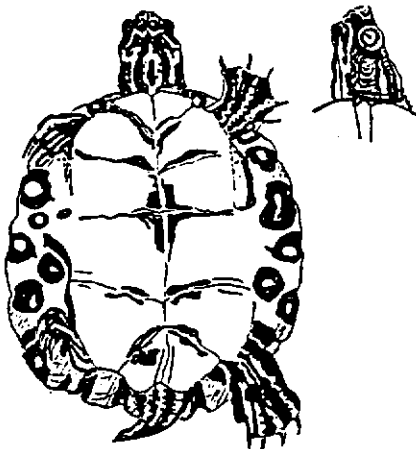
DESCRIPTION: The Redbelly Turtle is a large 26-32 cm (10 to 12 in) variably patterned basking turtle that can weigh up to 4.5 kg (10 pounds). The carapace (top shell) of an adult Redbelly is generally black to mahogany colored with light chestnut to red markings along the margin. The plastron (bottom shell) of the males is pale pink overlaid with dark mottling, while females have red plastrons with borders of grey along the seams of the shell plates. The ground color of the head, neck, limbs, and tail is black, marked with yellow or ivory lines. Males have shorter shells and longer tails and front claws than females. In old males, scales on the legs and lines on the soft parts often turn dull red, and males usually become progressively melanistic (blacken) with age.

Hatchlings are about 2.5 cm (1 inch) long and are more circular in shape than adults. They have a slightly keeled light green carapace marked with orange bars and greenish-yellow hieroglyphics, and light green circular spots along the perimeter of the underside of the carapace. The head, neck, limbs, and tail of hatchlings are green but transform to brown and then black over a two year period. Like adults, juveniles have yellow stripes on the head, neck, and limbs.

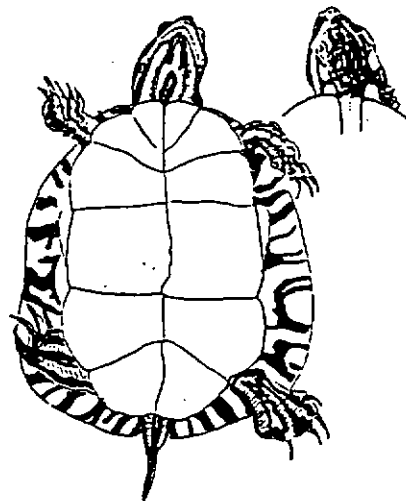
The combination of a prominent notch on the tip of the upper jaw flanked by toothlike cusps on each side, an arrow-shaped stripe running atop the head between the eyes to the snout, and the reddish plastron distinguishes redbelly turtles from other species of large basking turtles.



DeGraaf, Richard M. and Rudis Deborah D. 1981. Forest Habitat for Reptiles & Amphibians of the Northeast. Northeastern Forest Experiment Station and Eastern Region, Forest Service US Dept. of Agriculture.



Young Redbelly Turtle



Adult Painted Turtle

SIMILAR SPECIES IN MASSACHUSETTS: Painted Turtles (*Chrysemys picta*) are often mistaken for Redbelly Turtles because of their size and similar markings to a young Redbelly Turtle. Both have yellow markings on the head and neck and both may have reddish plastrons. By looking at the shell and underbelly of the turtle, one can observe the distinguishing characteristics of the Redbelly Turtle: its shell is up to half a foot longer and more domed than the Painted Turtle's. The top of the Redbelly's carapace is normally flattened or slightly depressed resembling a tire with most of its tread missing. Carapace ground color differs slightly in the two species - olive black on Painted Turtles and mahogany on Redbelly Turtles. The Redbelly Turtle's plastron is coral red or pink often with dark markings and circular spots along the perimeter, while the Painted Turtle in Plymouth County is usually a clean orange or yellow having no dark markings and a striped perimeter. In addition, Painted Turtles have additional narrow yellow lines on the neck and a prominent yellow spot on either side of the head just behind the eye - Redbelly Turtles lack this mark.

There are also pronounced behavioral differences in the two. Redbelly Turtles are shyer than Painted Turtles and will not bask for long if they note human presence. Redbelly Turtles typically live in remote ponds and will not tolerate human presence. In contrast, it is possible to get quite close to a Painted Turtle before it leaves its sunning spot.

RANGE: The Redbelly Turtle in Massachusetts is currently confined to ponds within Plymouth County in the towns of Plymouth, Carver, and Kingston. This isolated population of turtles was formerly described as a distinct subspecies, *P. rubriventris bangsi*. The primary range of the Redbelly Turtle is from the coastal plain of New Jersey south to North Carolina and inland to West Virginia. However, a 1990 study reported that these two populations were indistinguishable and represented disjunct with no subspecies. Archaeological evidence from Indian encampments suggests that before European settlement this turtle occurred in one continuous population throughout coastal Massachusetts and south to North Carolina.

HABITAT IN MASSACHUSETTS: In Massachusetts, the Redbelly Turtle inhabits freshwater ponds of varying sizes that have abundant aquatic vegetation. For nesting, the Redbelly Turtle requires sandy soil on land surrounding the pond.

LIFECYCLE/BEHAVIOR: The Redbelly Turtle feeds primarily on aquatic vegetation, particularly milfoil (*Myriophyllum* spp.). Especially when young, it may occasionally eat crayfish and invertebrates. Female Redbelly Turtles are thought to reach maturity at 8 to 15 years of age (later than the males), although sexual dimorphism is apparent at 5 to 7 years. The life expectancy of this species is believed to be forty to fifty-five years.

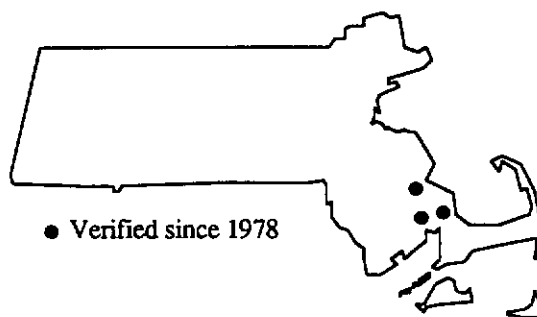
In late June or early July, the female begins nesting activity. Generally, nests are located within 90 meters (100 yards) of the pond, and usually one meter above pond level. Redbelly Turtles have been found nesting on both vegetated and unvegetated areas and in disturbed as well as undisturbed soils. Nests are dug 5 to 7 inches deep depending on the thickness of the substrate, size of the female, and the degree of disturbance to the female during nest preparation. She lays 10-20 eggs and incubation lasts between 73 and 80 days if the temperature stays consistently at 25 degrees Celsius. Hatchlings emerge from late August through October. Hatchling emergence depends more on the conditions of the substrate, temperature consistency, and nest site location than on the timing of egg deposition by the females. Rainfall may also effect emergence. Some hatchlings may overwinter in the nest if the late summer weather is unseasonably cool.

POPULATION STATUS IN MASSACHUSETTS: The Massachusetts population of the Redbelly Turtle is listed as **Endangered** by the Massachusetts Division of Fisheries and Wildlife and the U.S. Fish and Wildlife Service. Only about 300 breeding age individuals are known to exist. The Redbelly Turtle is a specialist with biological needs that make it vulnerable to a variety of environmental changes. Housing construction has significantly reduced this turtle's suitable nesting habitat and produced long term changes in certain land use practices, such as burning. In the past, areas around the ponds were periodically burned creating pitch pine/scrub oak barrens dotted with openings and grasslands. The openings around the beaches created by fire allowed the heat of the sun to penetrate and incubate the eggs. Today, these areas are protected against fire and as a result, are more frequently surrounded by closed canopy forests instead of openings. Residential expansion has also introduced pet predation, increased harassment, collection, vandalism, and road mortality.

In some instances, herbicide use in ponds to decrease pond vegetation and the infiltration of herbicides from adjacent cranberry bogs is believed to have altered the Plymouth Redbelly Turtle's food source and exposed it to chemical contamination. These impacts combined with the species' late maturation age and low rate of reproduction (less than one-third of females reproduce yearly), have made it difficult for the Redbelly Turtle to thrive. Hatchling mortality is very high for this species, and at times intense predation on the eggs by skunks and raccoons (which have increased as residential areas increased) destroying as many as half of the Redbelly Turtle's existing nest. Predation on the quarter to half-dollar size hatchlings also occurs from bullfrogs and probably from wading birds and predatory fish such as pickerel and bass.



Range of Redbelly Turtle



Massachusetts Distribution by Town

MANAGEMENT RECOMMENDATIONS: Continued research, sound management, habitat preservation, and education are vital to the recovery of the Plymouth Redbelly Turtle. In the area of research, ongoing studies of pesticide and heavy metal contamination on existing populations are important as this contamination has direct impact of the survival of this species.

Management needs include continued monitoring of existing populations to note any changes in the populations, periodic monitoring of ponds that were formerly inhabited, and the ongoing search for additional populations. Efforts should be made annually to locate and protect nests at ponds with major populations either by protecting known nests with wire or screen enclosures, or by trapping and removing the predators themselves. Continuing and improving the hatchling headstart program with further evaluation of additional suitable pond or river habitat will also play an important role in the recovery.

Management also plays a vital role in habitat preservation. Of primary importance is the need to protect occupied and potential habitat while improving habitat at ponds with known populations by clearing or creating nesting beaches and providing basking sites where necessary.

In addition to research and management efforts, education and law enforcement are of the utmost importance. The laws protecting the Redbelly Turtle and its habitat need to be more widely publicized and enforced as necessary. Biologists should continue to work with the cranberry industry and other agricultural enterprises to avoid potentially harmful activities. Education of private landowners and the public at large to increase awareness and heighten the consciousness are needed to protect and preserve this rare species in Massachusetts.

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